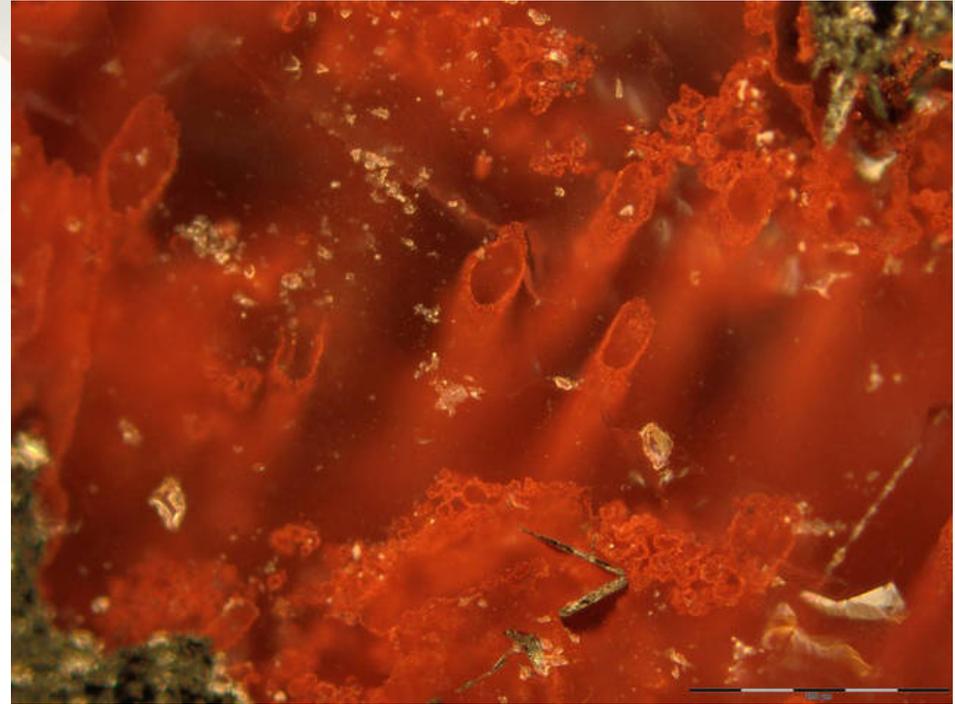


# Early Life on Earth Dates Back 3.77 Billion Years

**BACKGROUND:** Although it is not known when or where life on Earth began, some of the earliest habitable environments may have been submarine-hydrothermal vents. There are no confirmed microfossils from this period older than 3.5 billion years, due primarily to the highly metamorphosed (altered and weathered) nature of the oldest sedimentary rocks.

**THE RESEARCH:** This team analyzed jasper rock samples, from the Nuvvuagittuq belt in Quebec, Canada, finding microfossils of filaments and tubes filled with hematite, the mineral form of ferric oxide or rust, similar to the remains of modern day microbes living around hydrothermal vents. The presence of carbonate and carbon-containing minerals provided supporting signs of oxidation and biological activity.



**TAKE-HOME:** Collectively, these observations are consistent with an oxidized biomass and provide evidence for biological activity in submarine-hydrothermal environments dated to be at least 3.77 billion years old and perhaps as old as 4.28 billion years. The minimum age of the fossils would make them the oldest indication of life on Earth found to date.